

# Mechatronics/Robotics

Course Code: 21009

## Rational Statement:

Mechatronics/ Robotics is the new industrial discipline for understanding how complex systems integrate various elements in the mechanical, fluid power, and controls domain, combined with the ability to work in a team environment with people of different areas of expertise.

**Suggested Grade Level:** 9-12

## Topics Covered:

- Fluid power
- Basic motor controls
- Robotics and automation
- Security
- Circuit design
- Mechanical systems
- Mechatronics
- Career Possibilities

## Core Technical Standards & Examples

<b>Indicator 1: Classify equipment in the chosen topic area(s)</b>	
<b>Bloom's Taxonomy Level</b>	<b>Standard and Example</b>
<b>Evaluation</b>	<b>RBMT1.1. Demonstrate knowledge of equipment used in topic area(s)</b>  Examples: <ul style="list-style-type: none"> <li>• Identify type of equipment used in topic area(s)</li> <li>• List industry applications</li> </ul>
<b>Analysis</b>	<b>RBMT1.2. Examine the systems relationships</b>  Examples: <ul style="list-style-type: none"> <li>• Identify subsystems</li> <li>• Explain purpose of subsystems</li> </ul>

<b>Indicator 2: Access and demonstrate safety proficiency in topic area(s)</b>	
<b>Bloom's Taxonomy Level</b>	<b>Standard and Example</b>
<b>Evaluation</b>	<b>RBTMT2.1. Demonstrate proper safety procedures</b>  Examples: <ul style="list-style-type: none"> <li>• Operate and use proper personal protective equipment.</li> <li>• Observe and follow all safety rules based upon <i>Occupational Safety and Health Administration</i> standards</li> </ul>
<b>Evaluation</b>	<b>RBTMT2.2. Determine how to apply Lockout – Tag-out procedure</b>  Examples: <ul style="list-style-type: none"> <li>• Examine process</li> <li>• List hazard areas</li> </ul>
<b>Evaluation</b>	<b>RBTMT2.3. Classify Materials Safety Data Sheet (MSDS)</b>  Examples: <ul style="list-style-type: none"> <li>• Prepare labels and material safety data sheets (MSDS) to convey the hazard information</li> <li>• Handle all chemicals appropriately</li> </ul>

<b>Indicator 3: Construct, analyze and troubleshoot circuits</b>	
<b>Bloom's Taxonomy Level</b>	<b>Standard and Example</b>
<b>Synthesis</b>	<b>RBTMT3.1. Build a circuit according to schematic diagram</b> Examples: <ul style="list-style-type: none"> <li>• Chose proper components</li> <li>• Assemble a circuit in accordance with schematic diagram</li> </ul>
<b>Application</b>	<b>RBTMT3.2. Calculate circuit parameters</b> Examples: <ul style="list-style-type: none"> <li>• Employ correct formula or law to solve for unknown parameters.</li> <li>• Record calculated parameters using proper measurement parameters</li> </ul>
<b>Evaluation</b>	<b>RBTMT3.3. Measure circuit's parameters</b> Examples: <ul style="list-style-type: none"> <li>• Select and use proper test equipment to measure required parameters</li> <li>• Record calculated parameters using proper measurement parameters</li> </ul>
<b>Evaluation</b>	<b>RBTMT3.4. Compare calculated and measured solutions to analyze circuit operation</b> Examples: <ul style="list-style-type: none"> <li>• Graph calculated and measured parameters</li> <li>• Compare parameters to determine if they are within circuit parameters</li> </ul>
<b>Analysis</b>	<b>RBTMT3.5 Examine Proper Terminology and Career Possibilities</b> Examples: <ul style="list-style-type: none"> <li>• Prepare a report about the area of study</li> <li>• Design a questionnaire for an interview</li> </ul>